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AUTHOR Beier, Ernst G.; Zautra, Alexander
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ABSTRACT

The experiment discussed in this report investigates cross cultural ability to decode emotive meaning in extra-verbal vocal expressions of mood. The principal expectation of the study is that primitive mood expressions are understood in much the same way in all the countries tested. The moods depicted in the study--angry, sad, happy, flirtatious, fearful, and indifferent--are portrayed by Americans and interpreted by American, Polish, and Japanese subjects. Agreement across cultures on the mood expressed is high, and accuracy in response increases with the length of the expression to be interpreted. The results suggest the presence of a universal emotive language in the vocal channel. Details of the experiment are presented. Tables illustrate the statistical results, and a list of references is included. (VM)

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Identification of Vocal Communication of Emotions Across Cultures

Ernst G. Beier and Alexander Zautra

University of Utah

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Introduction

Recent investigations have uncovered evidence for the presence of universal elements in para-linguistic forms of communication. Cross-cultural studies of phonetic symbolism (Iritani, 1969; Osgood, 1965; Slobin, 1968) have reported common semantic factors and recognition styles among people who are from different cultures and who speak different languages. Research with infra-human animals (Andrew, 1963; Lorenz, 1965; Smith, 1969) has confirmed the presence of species' specific displays of mood, and studies of human facial displays (Beier, Izard, Smock, & Tougas, 1957; Burns, 1959; Ekman, 1969; Izard, 1968; Taguiri, 1969) give convincing evidence that facial expressions of fundamental emotions can be understood by people from primitive as well as modern societies regardless of cultural or language differences. Gestural and vocal expressions of mood are likely to have elements in common across cultures partially because of physiological restrictions of the specie and also because the earliest language learned is gestural and extraverbal. Infants cannot (at least we believe) decode many emotions but the most primitive ones, and it is likely that the commonality across cultures in coding and decoding of these moods, once we discover that there are such, may simply be due to the fact that we are dealing with the earliest learned primitive cues. Culture did not have time to add the culture specific information. The

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present study is designed to explore the ability to decode emotive meaning in extra-verbal vocal expressions of mood across cultures.

By directing attention to vocal expressions of mood, this study seeks to inspect emotive language for common properties. One attempt has been made previously by Kramer (1963) using American and Japanese subjects; his results suggested that the two groups had some significant agreement in their coding of the moods. All the subjects, however, resided in the United States and had ample opportunity to learn even the subtle nuances of American speech.

As a preliminary study, the present research was directed first toward exploring commonality of mood expressions among people living in different countries (Izard, 1968). Hence, four of the eight fundamental emotions catalogued by Izard were chosen for the study. Two emotive categories, "flirt," and "indifference" were included in the study with the thought that these are perhaps more complex emotions than primary emotions such as anger or happiness. The length of the mood expression was another factor thought to influence the accuracy of rating emotive messages. The longer the phrase the more information transmitted so that one could speculate that increasing the length of the mood expression should increase accuracy in decoding the messages.

The principal expectation of this study was that the primitive mood expressions would be understood in much the same way in all countries tested. Expressions of more complex mood expressions (flirt,

indifferent) were expected to receive less cross-cultural agreement than expressions of the primative moods. The additional question asked was whether the length of the phrase with which an emotion was coded should influence the relative accuracy of subjects in recognizing the emotive message. Finally, it was expected that cultures differ in the accuracy with which they decode individual mood categories. As stated, we derived these questions from the position that the infant's earliest coding and decoding involve primary mood expressions.

Method

Subjects. The subjects were selected from college populations in the United States, Japan, and Poland. Fifty-two college freshmen at the University of Utah, 54 students from Japan and 55 students from Poland comprised the cross-cultural subject pool. The subjects from the foreign cultures had no direct familiarity with the English language, though they might have seen American movies.

Procedure. A 96 item tape was contructed from six moods: angry, sad, happy, flirt, fear, and indifferent, using the recording of these emotions by college students at the University of Utah. One hundred and fifty student actors were asked to express the six moods using four neutral stimulus phrases of increasing length: "Hello," "Good morning," "How are you," and "There is no answer. You have asked me that question a thousand times and my reply has always been the same. It will always be the same." A test of the neutrality of these expressions across the six emotions is included in the results section. A tape-recording of these responses was screened by five graduate

students and a faculty member (all members of the research group) who selected 48 items for inclusion on the initial tape. On this tape 24 male and 24 female actors portrayed the six moods with each mood and each of the four stimulus phrases represented an equal number of times. The tape was played to 60 freshman psychology students to assess the reliability of the items. When a given item was rated belonging to one mood by 60% of the students, it was considered good enough to serve. Fifteen items in the original item pool failed to meet this criterion and were discarded. A new tape of 45 items was constructed using the same procedure described above and was played to another group of 45 freshman students in order to obtain replacements for the 15 items that did not meet criteria. For each of the 15 items, the new tape had three items matching in verbal content, emotion portrayed, and sex of the actor. The 15 items which received the highest agreement, above 60% on a single mood replaced the previously discarded items, yielding a 48 item tape. These items were replicated for cross-validational purposes, and to measure practice effects. The experimental tape, then, consisted of 48 items each repeated once, on which each of six moods were expressed eight times. The four stimulus words were balanced such that each of the phrases was represented twice on the tape with replication for each of the six moods. A group of 100 university students served as a criterion group and to cross-validate the emotive meaning of the 96 items of the tape. The subjects of the present study, in all countries, were provided with an answer sheet in language appropriate to their

culture and were instructed to listen to each expression and mark each mood whether it expressed happy, sad, indifferent, flirtatious, anger or fear. After 15 practice items were presented, the entire experimental tape was played to the subjects. The playing time of the tape was 40 minutes.

Results

The first question asked was whether the Japanese and Polish subjects accurately identified specific mood expressions from the items of the experimental tape. As stated, meaning was operationally defined for each item as 60-80% agreement among a group of subjects on what mood was portrayed. Using the normal approximation of the binomial, the probability that any one item would be rated with 30% agreement was less than .01. An analysis of the data revealed that the Japanese group rated 55 of the 96 items with 60% agreement or more, and the Polish group rated 51 of the items with at least that much agreement. It appears that the two groups did identify correct emotive meaning on a majority of the items with statistical significance.

In this study "accuracy" of the ratings was defined arbitrarily as the agreement of a given group with the American criterion group. On an overwhelming majority of items on which the Polish and Japanese agreed among themselves they also agreed with ratings of the criterion group (C). Fity-one of the 55 items with 60% or more agreement among Japanese raters were rated the same as the C group and 46 items of the 51 items reaching consensus for the Polish sample agreed with C group ratings.

An analysis of variance was performed on the accuracy of subjects' responses and the results reported in Table 1. Three major factors

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Insert Table 1 about here

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contributed to the variable success across subjects: nationality, mood and length of stimulus phrase. Figure 1 shows the variance due to

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Insert Figure 1 about here

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nationality and mood. American subjects were more accurate in decoding the items on the tape, which of course is not surprising since the criterion group against which the group was measured consisted of American students. However, the Japanese did not differ from the Polish group in overall accuracy in decoding emotive messages, but both groups differed from the American group. Taking only successful, i.e., accurate, ratings of the three groups and dividing them into specific mood expressions, each country ranked its success differently. From most successful to least, American ranked the moods as follows: happy, anger, flirt, indifference, fear, sad.

The Polish:

anger, indifference, fear, sad, happy, flirt.

The Japanese:

sad, indifference, anger, fear, happy, flirt.

The two countries asked to decode American standard emotive expressions apparently had more success with "anger," and "indifference"

than with 'happy" or "flirt." This may be due to semantic distances of words as indicated above, or to mood differences. In the latter case, one might conclude that anger and indifference have greater intercultural commonality than happy or flirt. The stimulus phrases accounted for a sizable portion of the variance in successful decoding of mood. The phrases themselves were not neutral (Table 1) and the longer phrases produced better overall accuracy. Figure 2 shows that

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Insert Figure 2 about here

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the length of the phrases did not affect American ratings. The scores of Japanese and Polish subjects improved with the longer stimulus phrases and for the longest phrase their scores were comparable to the American subjects. Trend analysis carried out for each nationality revealed no discernible linear trend for American subjects ($F = .727$, $p < .25$), but a sizable linear trend for the Japanese ($F = 178.00$, $p < .01$) and Polish groups ($F = 138.75$). Cubic and quadratic curves a o explain some of the variance for the Japanese groups (F quadratic = 6.82, $p < .01$; F cubic = 16.770) but not to the Polish group (F quadratic = 3.59, $p < .10$; F cubic = 1.88, $p < .25$).

The phrases themselves lead to variable accuracy in understanding the moods portrayed. On inspection of Figure 3 it is clear that while

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Insert Figure 3 about here

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the sentence items were easier to decode for five mood categories, there was much less accuracy on understanding portrayals of flirtatiousness using this phrase than on any other phrase. Shortest

phrase, "hello" produced the low ratings for items where "happy" and "fear" were portrayed while the phrase "good morning" was associated with low scores in decoding angry expressions.

A separate analysis of variance was employed to test the effects of the replication on accuracy of responding. The analysis revealed an increase in accuracy upon hearing the items a second time ($F = 30.45$; $p < .01$) with no discernible interaction between order and nationality ($F = .47$), order and mood ($F = 1.66$) and nationality, order and mood ($F = 2.11$).

It was thought that some mood expression in certain categories may have been non random, i.e., been preferred in the subjects' rating of the items. A two-way analysis of variance was performed on the distribution of the responses in the six mood categories. These results are reported in Table 2 and graphically represented in

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Insert Table 2 about here

Figure 4. No significant effects due to nationality were found while effects due to mood and the interaction effects were responsible for some of the variance in responding.

"Indifference" was the response most frequently used by all groups with "sad" being the second most frequent response for the Japanese and Polish groups. The interaction effects were due to what seemed to be cultural preferences for one mood category over another. The Japanese and the Americans called an item "fear" less frequently than any other

mood category. The Polish subjects, however, rated items as "happy" less often than the other five categories. In addition, American subjects rated items as "happy" more frequently than "sad" and "flirt" while the Japanese and Polish subjects used both the "sad" and the "flirt" categories more frequently than "happy."

When some rating categories are used more frequently by a given group (Figure 4) there is a higher probability that these "preferred" items will be rated accurately more often than items in less "preferred" categories. Observation of the figures shows that this

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Insert Figure 4 about here

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was not the case. Only in a few isolated cases did there seem to be any relationship between more frequently rated items and accuracy, and in no case did categories rated most frequently correspond to the moods most accurately decoded. The converse was also true with one exception. The least frequently used category for the Polish sample (happy) was also the category for which the Polish were the least accurate. Cultural preferences for the same mood categories over others seemed to have little effect on the relative accuracy in the six mood categories. Therefore, it can be stated that a "preference error" did not distort our sample.

There was some indication that the Japanese and the Polish, while agreeing among themselves, do not always agree with the Americans in the specific labeling of emotive speech. Small yet consistent

differences were found among cultures. The items rated as "flirt" by the 60% or more of the Japanese subjects were consistently rated as "happy" by Americans. Two items rated as "happy" by the Japanese 60% of the time were called "fear" by at least 60% of the American subjects. The Polish disagreed with the Americans on five of the items reaching consensus for both groups. The items (different from those two rated by the Japanese) rated as "flirt" by the Polish sample were consistently labeled as "happy" by Americans, and three items consistently rated as "sad" by the Polish group were called "indifferent" by Americans. Though the number of disagreements were small, they were quite consistent considering the rather stringent criterion of 60% agreement for the assignment of meaning to criterion. These results indicate an overwhelming agreement across cultures with regards to the identification of emotional meaning, but we also have some evidence for specific meaning within cultures.

Discussion

The results clearly indicate considerable commonality across cultures in recognizing vocal expressions of emotion. Not only were Japanese and Polish subjects accurate in decoding American mood expressions, but their accuracy increased with the length of the expression until the foreign subjects had scores similar to American subjects.

There was some evidence of cultural differences in the way in which the three coutnries classified the mood expression. The most obvious differences occurred within the emotive category "flirt." It appears that Japanese and Polish subjects had difficulty distinguishing

the mood "flirt," from 'happy"; both groups were less accurate in decoding these two categories than the others and had more difficulty agreeing among themselves. There were consistent differences across the two as compared with the Americans. Japanese and Polish students often label an item "flirt" that should have been 'happy." These results tell us of some cultural differences rather than commonalities and the distance of these two words may be less in Polish and in Japanese than in English, perhaps implying that the two meanings are more synonomous there. The question whether the moods "flirt" and "indifference" are more complex than what we called the "more primitive moods" can be seen from the following. In successful ratings, "flirt" was the mood most differently rated by American vs. Polish/Japanese groups. This would support our view but unfortunately 'happy" was in the same position, and we thought of 'happy" as a primary mood. "Indifference" is a very undistinguished difference between the American and the others as far as accuracy is concerned. Also in the total number of times in which the three cultures rate these moods, they do not appear to differ from the way they rate primary moods. We are forced to the conclusion that there is no evidence here that some moods are more complex than others.

Our data then suggest presence of a universal emotive language in the vocal channel which would account for the fact that our items were so accurately understood throughout. We believe that these findings lend some support to our conjecture that the human infant has a very limited ability to decode information and that

the cues he picks out of his universe are the most simple basic and primary cues of communication which are largely specie rather than culture determined. We failed to assess complexity of the moods we tested, but we feel that we established our main hypothesis of a cultural commonality of vocal communication.

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Table 1

Summary of Analysis of Variance for Accurate Ratings of 96-Item Mood Tape

Source	df	Mean Square	F
Nationality	2	205.52	54.80*
Stimulus Phrase	3	94.32	116.44*
Mood	5	45.68	30.05*
N x S	6	29.23	36.08*
N x M	10	24.75	16.28*
S x M	15	55.49	61.65*
N x S x M	30	10.02	11.13*
Within Groups			
Subjects within gps	157	3.75	
S x subjects	471	.81	
M x subjects	785	1.52	
SM x subjects	2355	.90	

*Significant at .01 level of confidence

Table 2

Summary of Analysis of Variance of Response

Frequencies in Six Mood Categories

Source	df	Mean Square	F
Nationality	2	13.51	4.61
Mood	4	2130.65	112.49*
Mood x Nationality	8	190.66	10.06*
Within Groups			
Subjects withing gps	159	2.93	
M x subjects withing gps	637	18.94	

*Significant at .01 level of confidence

Figure 1

Mean Number of Successful Ratings of Mood For Three Groups

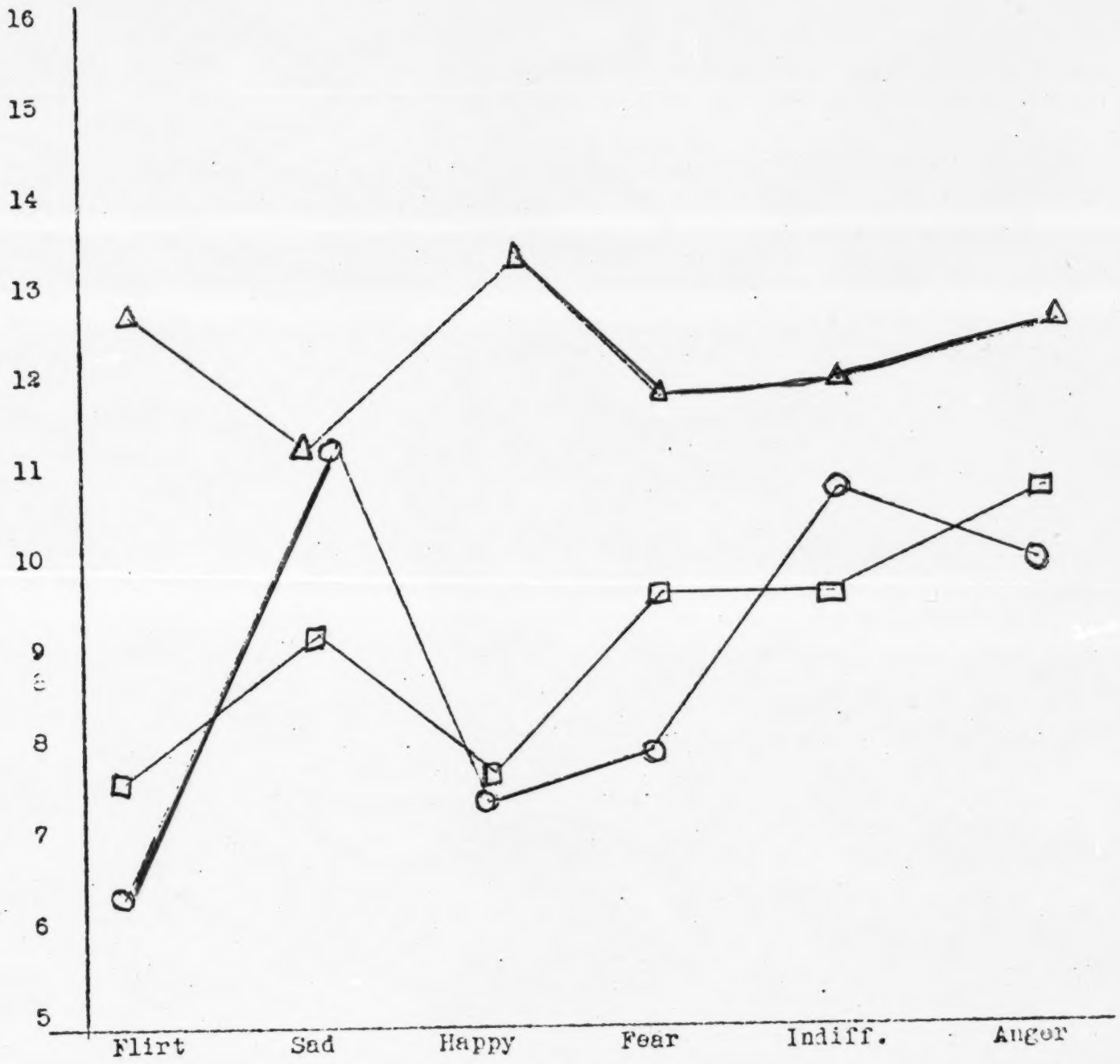


Figure 2

Mean Number of Successful Ratings of Mood with Four Stimulus Phrases.

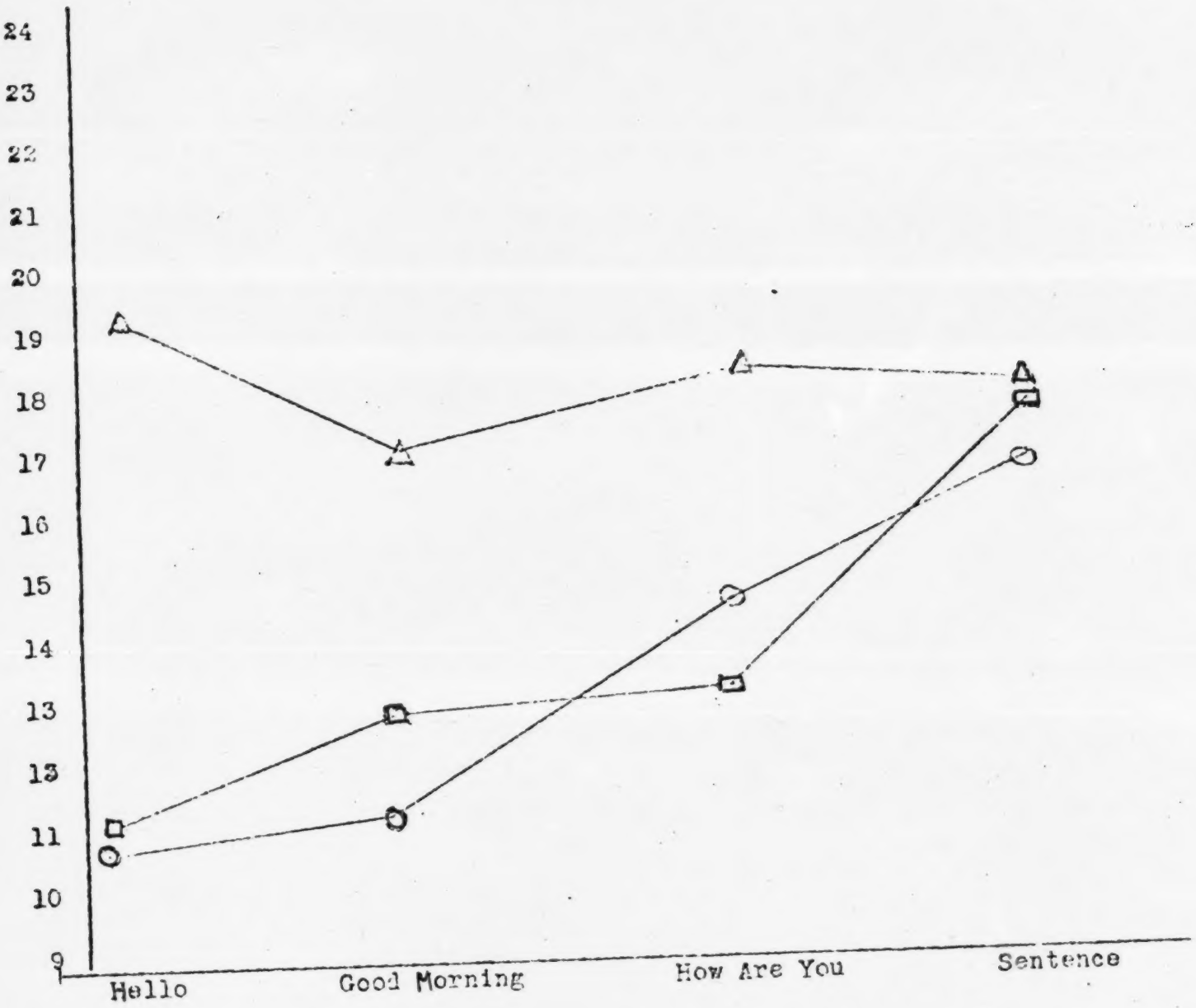


Figure 3

Number of Successful Ratings of Mood in Six Mood Categories with Four Stimulus Phrases

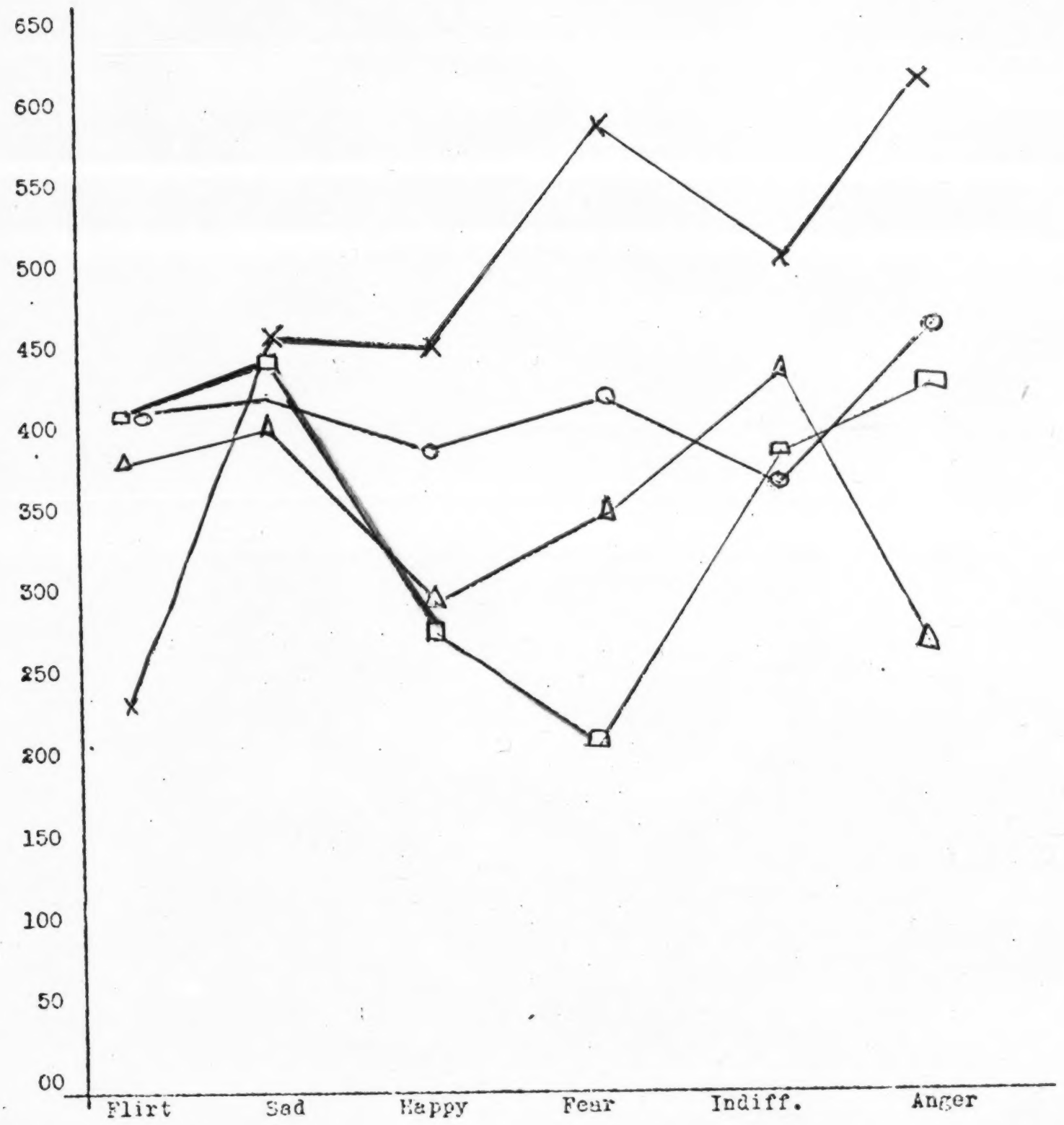
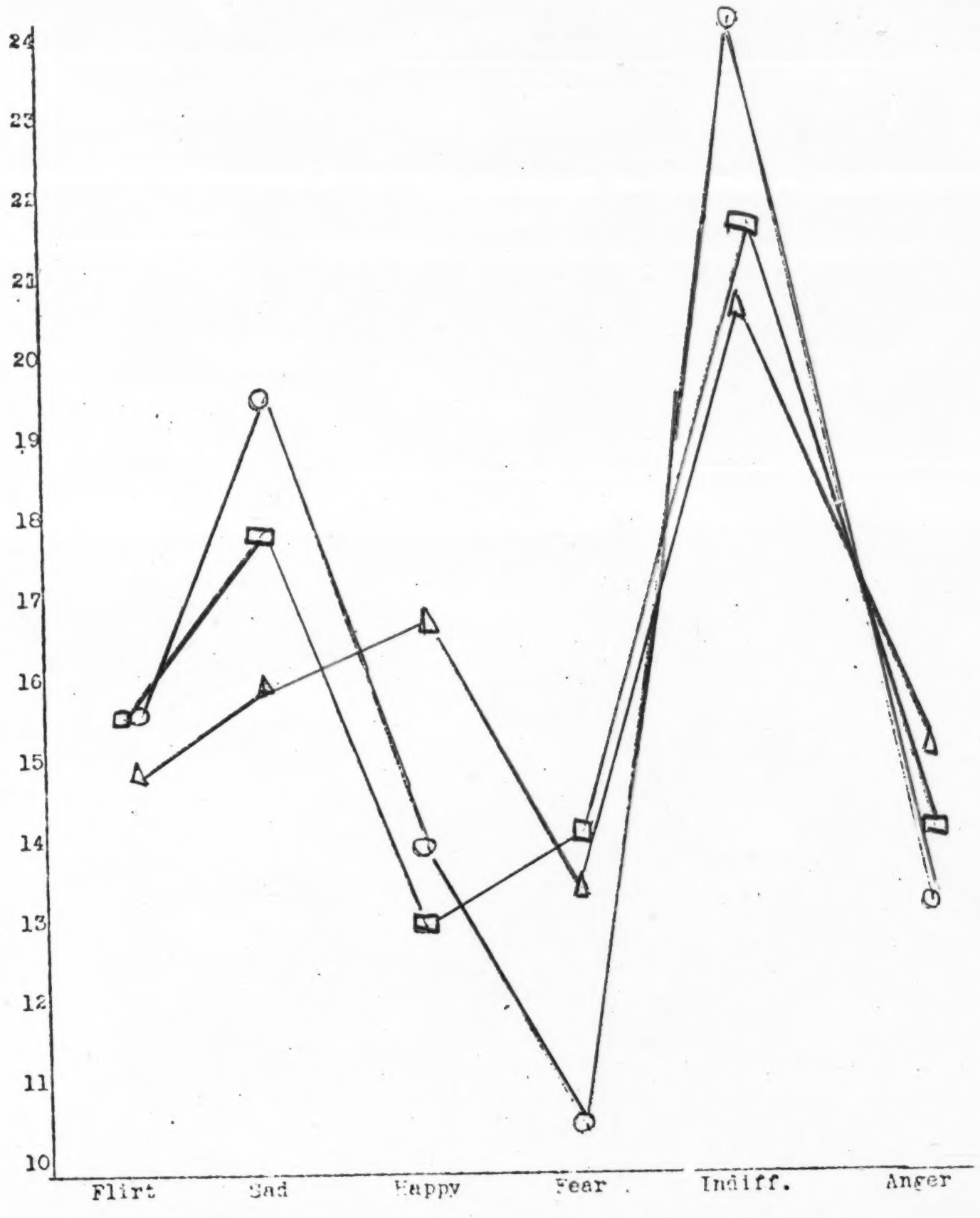


Figure 4

Mean Number of Responses in Six Mood Categories For Three Groups



ABSTRACT

Cross cultural qualities of emotive language were investigated using subjects from the United States, Japan, and Poland. The principal instrument in the research was a mood tape consisting of 96 items on which six moods are represented: anger, fear, happy, sad, flirt, and indifferent. The items were constructed by recording college students asked to portray the six emotions using neutral stimulus words such as "good morning," and "hello" an equal number of times, and selecting those items which had 60% or more agreement on one of the alternative moods when rated by American students. On the experimental tape each of the six moods is represented eight times with replication yielding a total of 96 items. The tape was played to Japanese and Polish students in their home country who did not speak English and to a separate American criterion group to cross-validate cultural purposes. The subjects rated each of the 96 items as to which mood it portrayed.

The results indicated considerable intra-group agreement on the emotive meaning of the 96 items. Agreement across cultures on the mood expressed was high and increased as a function of intra-group agreement. Principal effects due to nationality, mood, length of mood expression, and repetition were found to contribute to variable accuracy of subject ratings with a significant interaction between nationality and mood and length of expression. Cultural preferences in labeling the items were discovered, but these response biases were found to have little effect on the overall accuracy of the ratings. Some consistent differences in labeling the emotional meaning of the

items on the experimental tape across cultures were reported. The results are discussed as they relate to theories of the universal and culturally acquired properties of emotive language.